DOCUMENT RESUME

ED 138 665 UD 016 876

AUTHOR Rabkin, Judith G.; Struening, Elmer L.
TITLE Ethnicity, Social Class and Mental Illness. Working Paper Series Number 17.
INSTITUTION American Jewish Committee, New York, N.Y. Inst. on Pluralism and Group Identity.
PUB DATE May 76
NOTE 50p.

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS Blacks; *Comparative Analysis; *Ethnic Groups; Ethnic Status; Italian Americans; Jews; *Mental Health; *Mental Illness; Psychiatric Services; Public Health; Puerto Ricans; *Social Class; Social Status
IDENTIFIERS *Ethnicity; Irish Americans; *New York (New York)

ABSTRACT

This report is an analysis of five ethnic groups in New York City (Jews, blacks, Puerto Ricans, Italians, and Irish), and makes correlations between ethnicity, social class and mental illness. It estimates the extent to which five indicators of health in area populations account for variation in rates of mental hospitalization for men and women (21-64). It is an assessment of the relative importance of social class and ethnicity in accounting for rates of hospitalization. Among the findings of the study are the following: (1) there is a trend for greater outpatient utilization by blacks, (2) diagnosed mental illness is found more often among Puerto Ricans than among the rest of the population, (3) the lower rates of psychiatric hospitalization of Jews is associated with demographic and cultural characteristics, (4) while the Italians' rate of mental illness is low, it has increased for both sexes in the last 65 years, (5) compared to other first and second generation Americans and to the total white population, the Irish have higher rates of diagnosed mental illness and probably higher prevalence rates of alcoholism in the community as well. In this study, the knowledge of the ethnic composition of certain geographic areas (with social class held constant) is used to predict with reasonable accuracy close to 37% of the incidence of psychiatric hospitalization. These studies cumulatively suggest that social support generated by the ready accessibility of ethnically similar people plays an important role in influencing vulnerability to stress and psychiatric disorder. (Author/AM)

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ED138665

WORKING PAPER SERIES

NUMBER 17

ETHNICITY, SOCIAL CLASS AND MENTAL ILLNESS

By

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Abstract

Ethnicity has become a major social and political issue in the United States. Ethnicity is a shared history that plays a major role in shaping the culture of a group of people -- their values, attitudes and life styles. More and more, studies are now being undertaken to determine just how important the role of ethnicity is in American society.

From an analysis of five ethnic groups in New York City (Jews, blacks, Puerto Ricans, Italians and Irish), Drs. Rabkin and Struening define important correlations between ethnicity, social class and mental illness. Highlighting the deficiencies of demographic data which do not collect information on third- and fourth-generation Americans, the authors underscore the need for more precise statistics on the true nature of American diversity. Yet, even within these limitations, a highly significant finding emerges: a knowledge of the ethnic composition of certain geographic areas (with social class held constant) enables us to predict with reasonable accuracy close to 37% of the incidence of psychiatric hospitalization.

This conclusion and others presented in this study suggest that there is a definite need for ongoing research on the relevance of ethnic as well as social class factors in the maintenance or breakdown of natural support systems in communities.

ETHNICITY, SOCIAL CLASS AND MENTAL ILLNESS:

A SOCIAL AREA ANALYSIS OF FIVE ETHNIC GROUPS IN NEW YORK CITY

by

JUDITH G. RABKIN and ELMER L. STRUENING

It is generally acknowledged that psychiatric disorders are not distributed randomly throughout populations, but tend to be concentrated within definable subgroups. The major dimensions historically associated with such variations are those of ethnicity, social class and immigration which are characteristically interrelated. That is, these three characteristics tend to appear in specific combinations. Immigrants, who have lower social status than the native-born, are typically poorer, less educated, hold menial jobs and are not warmly received by the native population. Ethnic minorities have immigrated more recently than the Anglo-Saxon Protestant majority; more of the black population than the white has migrated within the United States in the past fifty years. Newer arrivals have had less time to work their way up in terms of social and economic status and political influence; those occupying lower status positions have markedly higher rates of psychiatric disorder.

In the present study, our purpose is to extract from this matrix of predisposing variables that of ethnic membership and to describe patterns and distributions of psychiatric disorders that have been associated with major ethnic groups. Since we are concerned with the population of New York City, we confine our analysis to ethnic groups who comprise substantial portions of this population: the black, Puerto Rican, Jewish, Irish and Italian.

After reviewing methodological problems prevailing in this research area, we present data reported in the literature describing ethnic differentials in incidence and prevalence rates, hospital admissions and diagnostic and treatment procedures. A brief section considers these findings in relation to populations studies, proposing the variable of ethnic density as a predictor of distributions of mental illness for populations or areas. We then present a social area analysis of ethnic differentials in psychiatric hospitalization rates with the variables of sex and income controlled. Our data are drawn from the 1970 Census and New York State Department of Mental Hygiene records for the boroughs of New York City.

METHODOLOGICAL CONSIDERATIONS

Although the variable of ethnic membership is easily defined, a variety of methodological problems have, in the past, interfered with efforts to study patterns of mental illness for different ethnic groups. It would therefore seem helpful to consider some of these problems before turning to the literature on ethnicity and mental illness.

1. *Ethnicity and Social Class* - the task of determining prevalence rates of psychiatric disorders as a function of ethnic membership is vastly complicated by the high correlation between ethnicity and social class.

   It is well documented that the lowest social class has by far the greatest incidence of psychosis, that prevalence rates of both functional and organic disorders are higher (Fried, 1969; Hollingshead and Redlich, 1958). Typically, lower class patients arrive at psychiatric institutions by way of police, courts and social agencies in contrast to self- or physician referrals among middle-class patients, while the more privileged use general and private hospitals (Kramer, 1967). Treatment methods and outcomes also differ as a function of ethnicity and social class, as does the likelihood of hospital discharge and readmission (Myers and Bean, 1968; Nuttall and Solomon, 1970). Varying ethnic and social class patients tend to receive different diagnostic labels, treatment plans and therapies, use different hospital facilities and have different prognoses.

   In dealing with lower class populations, it becomes a monumental challenge to differentiate the distinguishing characteristics of ethnicity from those of social class in relation to psychiatric disorders. Additional complexities stem from the interaction between migration and mental illness so often observed. While no single research undertaking can completely resolve these complicated issues, they must be considered in some form for results to be valid.

2. *Limitations of Demographic Data* - a second methodological problem that warrants consideration is the likelihood of significant under-enumeration of the size of ethnic groups in virtually all

public records including the Decennial Census and Vital Statistics. Authorities estimate that as much as 10% of the black population may not have been counted in the 1960 census. In addition, the census attributes ethnic affiliation only to immigrants and their children, thus leaving third and fourth generations uncounted. Since rates are determined by calculating frequency of the observed event divided by the total population, they are distorted by under-enumeration in either numerator or denominator.

3. *Defining Mental Illness* - difficulties in the definition of mental illness and variations in diagnostic criteria and case-finding methods are partially obviated by using psychiatric hospitalization as the criterion of mental illness. This measure itself is also subject to varying definitions, sometimes referring exclusively to public mental hospitals, other times including private outpatient as well as inpatient figures. However, authors are usually careful to specify the populations to which their findings apply so that adjustments can be made in comparing studies, and this is one of the least ambiguous variables of mental illness available.

4. *Incidence ond Prevalence* - many of the studies describing demographic characteristics of mental patients use *point prevalence rates* which consist of a census of all patients hospitalized on a fixed occasion. *Incidence rates*, on the other hand, refer to the number of new cases occurring in a given period of time and are usually determined by hospital records of first admissions. While neither measure explicitly takes into account the length or frequency of hospitalization, it is obvious that prevalence rates are largely influenced by length of stay, while incidence rates reflect number of hospitalizations. This distinction becomes significant in evaluating patterns of psychiatric disorder in population subgroups where the two measures are divergent, as among geriatric patients with age-related diagnoses. It is influential also in comparisons of groups whose demographic characteristics have differential effects on probability of rehospitalization and length of stay, as in the case of ethnicity. It is therefore important to note which measure is used in a given study.

5. *Contingencies* - psychiatric hospitalization is not determined solely, or even primarily, by the presence of behavior that can be labelled mentally ill. Numerous epidemiological studies have made it clear that there are more disturbed people outside institutions than in them (Srole, Langner, Michael, Opler and Rennie, 1962; Susser, 1968). Social, physical and economic contingencies contribute to such determination. For example, one has to be exposed to a public institution authorized to make psychiatric diagnoses before one can officially become a mental patient. There is considerable evidence that some groups, such as blacks who have migrated from the southern to northern states, have more exposure to such contact than others (Guttentag and Denmark, 1965). Availability of hospital beds, distance to psychiatric facilities, funds or insurance to pay for them, visibility of the disturbed or disturbing behavior, and availability of family support are contingencies which mediate hospital admission. Other considerations are the prevailing economic climate, the prospective patient's employment status, and family and community attitudes toward mental illness (Kreisman and Joy, 1974; Rabkin, 1974).

In general, hospitalization rates accurately represent proportions of different population groups who are brought to psychiatric facilities and who are admitted. But these rates may not be directly correlated with degree of psychopathology within groups who are differentially affected by some of the contingencies associated with risk of hospitalization.

While methodological problems tend to cloud relationships and interactions sought in social psychological studies, these limitations do not lessen the need to understand the role of ethnic and social class factors in the incidence of mental illness.

RESEARCH FINDINGS ON THE ETHNIC FACTOR

Blacks

Despite its apparent clarity and the large number of investigators who have studied it, the question of racial differences in rates of mental illness remains controversial. Since the 1840 census, separate rates of mental illness for black and white Americans have been computed periodically. Results have been inconsistent. Many discrepancies are attributable to the scope of the data being analyzed, whether rates are based on public hospital admissions, all hospital admissions,

out-patient records or community surveys. Since broader data bases are more representative of the total population and, at the same time, less reliable in terms of accuracy, it is difficult to resolve the conflicting reports.

The majority view is that black rates exceed those of the white population. This racial difference is attributed to social, cultural and economic conditions rather than genetic factors. In order to define areas of consensus and to locate sources of disagreement, findings will be considered in terms of the study population utilized.

Clear-cut racial differences are almost always found in analyses of mental hospital admissions records over the past 130 years. In his review of 21 studies of racial differences in mental illness, Fried (1969) reported that all investigations based exclusively on hospital records found higher rates among blacks. Pasamanick (1963), who does not believe that overall black rates exceed those of whites when community rates are taken into account, found in his survey that state hospital admission rates were 75% higher for blacks in Baltimore in the 1950's. Fischer (1969), who shares Pasamanick's views, also reported that blacks are over-represented in public mental hospitals which account for most of the hospital beds in the United States. Kleiner, Tuckman and Lavell (1960), Pokorny and Overall (1970), Pettigrew (1964, 1974) and Malzberg in his periodic analyses have also reported that rates for blacks exceed those of whites in public and private hospitals combined.

Fisch, Gruenberg and Bandfield (1974) studied all 1962 admissions from one health district in Manhattan to the psychiatric emergency room of the local municipal hospital. They found rates for black men and women were double those of white rates, most notably in the 25-34 age bracket. With respect to their distribution among the three most common diagnostic categories -- schizophrenia, conditions associated with alcohol, and depression -- blacks were over-represented in the second and under-represented in the third.

Ozarin and Taube (1974) conducted a comprehensive analysis of the characteristics of all patients seen in all mental health facilities in the United States during 1971. This included public, private and general inpatient facilities, out-patient services and day care visits. They reported that 22% of those admitted to public mental hospitals were non-white, compared to less than 5% to private mental hospitals, 16% to general hospital psychiatric units and 21% of admissions to community mental health centers. From the report's preliminary data, it can be computed that 18.7% of patients seen at these four kinds of inpatient facilities were nonwhite, compared to 11% in the population who are nonwhite. While non-whites continue to be somewhat over-represented in such facilities, it is not to the extent previously reported.

Pugh and MacMahon (1962) studied nation-wide *point prevalence* rates by race over a sixty-year period. The number of blacks has increased at a faster rate than those of either native or foreign-born whites. By 1950, black rates exceeded those of whites in all geographical areas for both sexes and in all age groups. This racial discrepancy is greater for those under 65 and most striking for black males between 15 and 24 years, whose rates exceeded the native white rate by 300% in 1950. Pugh and MacMahon attribute these high prevalence rates both to higher rates of first admission and to longer hospital stays.

In general, investigators who have reviewed the literature conclude that repeated studies of hospital admissions in a variety of geographical areas usually show black incidence and prevalence rates for major mental disorders to significantly exceed those of whites.

While these findings are comparatively clear-cut, they are accorded widely divergent interpretations. For example, Kleiner *et al.* (1960) regard the high black rates as indicators that the greater vulnerability of blacks to mental breakdown suggests their frustration tolerance is impaired earlier and more often in the face of greater pressures and restrictions of the social environment. Kleiner and Parker (1967) and Bagley (1958) have suggested that goal striving in a climate of limited opportunity has led to this higher incidence of disorder. Wilson and Lantz (1957) accounted for these rates in terms of an acculturation hypothesis, referring to the "uncertainties of the Negro race as they cross from one culture to another." Other investigators discount the variable of race entirely, instead attributing the observed differences to social and migration status and economic disparities. It has been pointed out that black communities are typically more socially disorganized with vastly higher proportions of one-parent families, out-of-wedlock children, unstable living arrangements, lack of community leadership and high unemployment and juvenile delinquency rates (Bernard, 1966; Kriesberg, 1970). A large proportion of blacks are lower-class, poor and less educated; poverty and lower social status are associated with less tolerance for the mentally ill in the community. Finally, blacks are restricted, as all poor and lower class members are, in the range of psychiatric facilities available to them (Fischer, 1969; Fried, 1969; Klee, Spiro, Bahn and Gorwitz, 1967; Pasamanick, 1963).

Studies of community prevalence of mental illness and rates of less severe disorders seen among out-patients as well as hospitalized patients lend some credence to those who object to a racial interpretation of overall incidence rates. It is noted, however, that such findings tend to be

less conclusive than those based on hospital records, and are subject to geographical variations. In his literature review, Fried (1969) found eight studies that included non-hospital cases but limited themselves to severe psychiatric disorders. Of these, two studies found white prevalence rates higher. Five additional studies included both non-hospital cases and a wider range of diagnostic categories encompassing milder disorders. These were cumulatively ambiguous in their findings: two reported higher black rates, two reported higher white rates, and one reported mixed results. Interpretation of these studies is further complicated by variations in period of time studied and locale. The four studies showing higher white rates were based partly or entirely on populations in Southern states where facilities for black patients were, until very recently, segregated and severely restricted both in bed capacity and services rendered. In view of these considerations, Malzberg (1959) has concluded that the low rates of psychiatric disorder among southern blacks is attributable to the lack of treatment facilities.

Pasamanick (1963) conducted a comprehensive community survey in Baltimore during 1954, based on a stratified sample of 809 respondents and hospital records. For the psychoses, he found vastly higher black prevalence rates in state hospitals, higher white rates in private and Veteran's Administration Hospitals and community rates for whites ten times greater than those for blacks. The impact of these results is diluted by two factors, however. First, internists rather than psychiatrists actually interviewed the community respondents. More important, the community prevalence rates were estimated from only 17 identified cases of psychosis.

In contrast to Pasamanick's findings, in a community survey of 318 Florida respondents, Schwab, McGinnis and Warheir (1973) found that more blacks than whites were rated psychiatrically impaired, especially in the youngest and oldest age ranges studied. Blacks also reported more days missed from work due to ill health. The authors related these findings to the blacks' greater exposure to rapid social change in the 1960's.

For those with neuroses and psychophysiological disorders, who comprise only a small proportion of hospital cases and are mainly seen on an out-patient basis, white rates greatly exceed those of blacks in Pasamanick's survey and other studies. With respect to differential manifestations of distress, Derogatis, Covi, Lipman, Davis and Rickels (1971) studied 1,000 black and white anxious neurotic out-patients who completed a 58-item symptom checklist. They found an inverse linear correlation between distress level and social class for whites but not for black patients. That is, for white patients distress levels increased as social

class declined. For blacks, in contrast, middle-class patients exhibited the highest distress levels on four of the five symptom factors extracted from the checklist: the depression, anxiety, obsessive-compulsive and irascibility factors. The authors suggest that middle-class black patients seem to experience unique or more intense stressors than blacks of higher or lower status.

Among those diagnosed as mentally deficient in institutions or in the community, black rates are higher than white. This difference has been attributed both to organic factors associated with higher black rates for complications of pregnancy and birth, higher rates of pre-maturity, and social factors such as lack of intellectual stimulation and educational neglect (Pasamanick, 1963). Analyzing the causal role of poverty in mental retardation, Hurley (1969) pointed out that 80% of those considered retarded are simply poor people whose cultural and psychological backgrounds prevent them from performing adequately in middle-class society. Among the ranks of the "environmentally deprived," blacks are considerably over-represented.

At the present time, it is widely agreed that the genetic potential for mental illness is roughly equal among racial groups, but that "dissimilar situations trigger the potential to diverse degrees," as Pettigrew (1964) has put it. The critical variable that emerges seems to be environmental rather than racial, leading us to conclude with Fischer that there is no evidence pointing toward a causal relationship between being black and being mentally ill.

The conclusions regarding the sources of racial disparities in the incidence of treated major psychiatric disorders are bolstered by analysis of racial variations in diagnostic and treatment procedures and intake and discharge policies in psychiatric facilities.

It has been asserted that white psychiatrists are influenced in their diagnostic decisions by the patient's race. Pasamanick (1963) suggested that because of the inability of white psychiatrists to comprehend the nuances in the black subculture and the behavior of individuals socialized in this subculture, they tend to over-diagnose psychoses among blacks. In the study of symptomatology differentials in the records of black and white schizophrenics, de Hoyos and de Hoyos (1965) reported that white psychiatrists under-reported symptoms of black patients due to the greater social distance between them. This does not necessarily influence the primary diagnosis, but leads to less detail and explanation in descriptions of the patient's psychiatric status.

Guttentag and Denmark (1965) have also explored diagnostic bias associated with race. They observed significant differences in rates of psychiatric hospitalization in New York

State for northern and southern born blacks: the former conform to northern white rates while rates for migrant blacks were much higher. They pointed out that migrant blacks tend to arrive at diagnostic institutions in greater numbers and, once there, are diagnosed as "psychotic" with greater probability than native black or white residents. In a study of psychological test performance of hospitalized southern black women and a matched group in the community, they found no differences between these groups although both differed from national norms based on the total population. Their implication is that southern black migrants are more likely to be brought to the attention of mental health professionals and are more apt to be seen as mentally ill than either black or white native residents, merely on the basis of their subcultural differences.

Treatment procedures are generally acknowledged to vary in relation to patient characteristics (Lorion, 1974; Rabkin in press). Lower-class and minority patients are less likely to be accepted for treatment at out-patient facilities due to factors such as "insufficient motivation" or lack of readiness (Gordon, 1965; Jones, 1975). If accepted they are more apt to be seen by lower-ranking personnel and to be treated with somatic methods (Maas, 1967; Schaffer and Myers, 1954). They are more likely to drop-out of treatment and, if they do remain, they are seen for a briefer period of time. Within social classes, minority patients receive less treatment than whites (Karno, 1966). Altogether, the double handicap of low social status and race make it appreciably more difficult for black patients to receive help from out-patient psychiatric facilities.

Since out-patient facilities are of limited value in view of the foregoing observations, and private psychiatric treatment is economically impossible for most, it is not surprising that blacks utilize inpatient facilities in disproportionate numbers. Once admitted, their hospital stay tends to be lengthier and discharge rates lower than for white patients (Maas, 1967). In a study of nearly 6,000 first admissions during the 1950's to St. Elizabeth's Hospital in Washington, D.C., Chassan (1963) found that both race and sex were related to discharge within a year: white males were released in greatest numbers followed, in descending order, by white females, black males and black females. Chassan suggested that these rates may be related to differences in type of treatment and attention received in the hospital by black and white patients. Linn (1959) reported similar findings for patients admitted with psychotic disorders. Hollingshead and Redlich (1958) observed that black patients were more apt to get only custodial care. Singer (1967)

studied the treatment received by 160 white and 160 black schizophrenics from 1956 to 1962. He found that black patients were given only drugs as treatment 50% more often than white patients, while receiving psychotherapy less than half as often.

In short, black patients have been treated differently and less favorably in their contacts with mental health professionals. They are less likely to be given psychotherapy. Once they seek hospitalization or are referred by public authorities such as the police and courts, they are apt to be hospitalized for longer periods of time. This undoubtedly contributes to the greater prevalence of major psychiatric disorder among blacks, and perhaps to higher rates of rehospitalization. However, it is our overall impression that the pre-existing social conditions contribute to greater numbers of blacks in need of professional help.

With respect to future trends, there is evidence to suggest a shift in utilization patterns among blacks. As the director of psychiatric social service at Harlem Hospital has observed (Russell, 1974), until recently blacks have not sought out psychiatric services. But this situation is changing. With the expansion and improvement of facilities, applications for treatment have multiplied. Supporting evidence is derived from the comparatively high rate of black utilization of community mental health center services (Ozarin and Taube, 1974), and the recent finding by Tischler *et al.* (1975) that ethnicity was not related to facility use in an area of New Haven that is well provided with outpatient facilities. This trend of greater voluntary outpatient utilization by blacks is apt to continue as more effort is directed at rendering psychiatric services accessible and responsive to the needs and expectations of black communities. These changes may appear statistically in terms of more visits to out-patient facilities and, perhaps ultimately, in fewer or briefer hospital stays.

Puerto Ricans

Of New York City's large ethnic groups, Puerto Ricans arrived most recently. Though some came to the mainland during World War I, they did not migrate in substantial numbers until after 1954. According to the 1970 census, 812,000 first and second generation Puerto Ricans lived in New York City. Puerto Rican representatives estimate their number as ranging from one million to 1.3 million (Burks, 1972). Unlike the Census Bureau, their count includes third and fourth generation Puerto Ricans. In 1970, there were 3.3 million first and second generation residents of all "foreign stock," excluding Puerto Ricans. In the census

figures used, at least one New Yorker in nine is Puerto Rican.

Migrating from a rural underdeveloped island, most Puerto Ricans arrive with meager education and occupational skills. This background, in addition to a high birth rate, has kept income, educational status and occupational rank lower than those of any other ethnic group including blacks. Between first and second generations striking gains have occurred in all areas of achievement (Fitzpatrick, 1971), but for the group as a whole, socioeconomic status is still very low.

Epidemiological studies of mental illness among New York City residents consistently report higher rates for Puerto Ricans than for other ethnic groups or for the total population (Lubchansky, Egri and Stokes, 1970; Srole *et al.*, 1962). Malzberg (1956), in his analysis of admissions to all New York State psychiatric hospitals 1949-1951, found a higher overall admission rate for Puerto Ricans than non-Puerto Ricans. First admission rates with a diagnosis of schizophrenia among Puerto Rican males were more than double that of non-Puerto Rican males, and rates for Puerto Rican females were nearly as high. Fifty-eight per cent of Puerto Rican admissions were diagnosed as schizophrenic, compared to 29% for non-Puerto Ricans. As Sanua (1969) observed, this is the highest per cent of schizophrenia of all groups in the United States. Although this diagnostic distribution is partly attributable to the youth of the Puerto Rican population, their rates were higher in all age groups. In contrast to the usual pattern among immigrant groups, second generation Puerto Ricans had a higher *total* rate than their parents, although the proportion diagnosed as schizophrenic was lower. Malzberg (1965) also compared admission rates of white and non-white Puerto Ricans and found, expectably, highest rates for the non-white Puerto Rican who bears the multiple burdens of color, alien culture, foreign language and the stress of migration. In short, as Malzberg concluded, "a person of Puerto Rican origin has a greater probability of developing a mental disease during a lifetime than an average member of the entire population" (1956).

In 1968, Fitzpatrick and Gould replicated this work, finding even more of a disparity in rates of schizophrenia between Puerto Ricans and the general population than Malzberg had observed (Fitzpatrick, 1971). According to their summarized findings, the rate of first admissions for schizophrenia for Puerto Rican males in New York State in 1967 was 122 per 100,000, compared to the rate of 36.6 per 100,000 males in the general population. For Puerto Rican females the rate was 84.2; for females in the general population it was 32.6 per 100,000.

In community surveys, comparable results have been obtained. In their study of residents in midtown Manhattan, Srole *et al.* (1962) found half of the 27 Puerto Ricans in their sample were diagnosed as impaired with marked, severe or incapacitating

symptoms. This was double the rate found for any other subgroup in the study, even when compared with first generation members of otherethnic groups. In a survey of 1,283 residents of Washington Heights in New York City, Dohrenwend and Dohrenwend (1969) found that Puerto Ricans reported significantly greater numbers of psychiatric symptoms in comparison to their class counterparts or those with equivalent education in other ethnic groups. They also scored higher on measures of possible sociopathic and paranoid tendencies. However, the Dohrenwends' caution that some of these disparities may be due to methodological factors such as subcultural differences in response styles, language used to express psychological distress and concepts of socially desirable behavior. These cultural differences were also noted by Lubchansky, Egri and Stokes (1970) in their studies of Puerto Rican spiritualists.

Langner, Gersten and Eisenberg (1974) interviewed the parents of over one thousand children in a Manhattan community survey regarding factors related to childhood behavior disorders. They compared stressful conditions experienced by black, Spanish and white children, and also the extent and nature of behavior disorders found within each ethnic group. Stressors were classified as demographic (e.g. many moves), parental (e.g. marital discord), and parent-child (e.g. rejecting parental attitudes). They found black and Spanish children were much more subject to these stressors, with black children experiencing highest cumulative amounts of stressful conditions. In terms of behavior disorders, black and Spanish children had much higher impairment ratings than white children, but did not differ significantly from each other. Children in each ethnic group showed one predominant cluster of behavior difficulties. White children were more likely to be involved in intrafamilial conflict. Black children were engaged in more extrafamilial conflict and antisocial behavior. Spanish children displayed more organic-developmental problems associated with illness as well as social factors. Finally, the authors found that ethnicity was a more powerful predictor of childhood behavior than was social class, though both made independent contributions. Mechanic (1969) reached a similar conclusion based on studies of illness behavior in general.

Apart from the methodological considerations noted by the Dohrenwends, factors contributing to high rates of reported mental illness among Puerto Ricans in both hospital and survey data include migration, childrearing practices and spiritualist beliefs.

Because Puerto Ricans are the most recent immigrants, the relationship between migration and mental illness has greater relevance for Puerto Ricans than for other New York City ethnic groups. Almost all studies show higher rates of major mental illness for migrant or immigrant groups than for the non-migrant

native-born. Much of this disparity has been found associated with differences in education, social class and other intervening variables. Nevertheless, there remains an association between migration and mental illness that cannot be accounted for on this basis. As we noted earlier in a review of this literature (Struening, Rabkin and Peck, 1969), some aspect of the transition from one society to another apparently constitutes a hazardous situation leading to increased risk of psychiatric hospitalization.

The development of mental illness in migrant populations has been related to the amount of social change experienced in the transition from one setting to the other. Alterations in life style, family organization and role assignment, membership in social networks and extent of community supports each contribute to the individual's vulnerability to the experience of stress and illness (Rabkin and Struening, 1975). For Puerto Ricans, these changes have been vast. They have moved from a rural agricultural setting to an urban industrial one; from communities where color was immaterial to one where attitudes are decidedly affected by one's color; from a patriarchal family structure to a setting where women often are expected to actively involve themselves in such areas as the schooling of their children; and from a group with homogeneous beliefs, values and attitudes to a much more mixed and inconsistent milieu. Further, their new lives in New York City are characterized by continued mobility, albeit within municipal boundaries. Fitzpatrick (1971) noted that Puerto Ricans have spread out through all parts of the city much more rapidly than was true of earlier ethnic arrivals, thus exposing themselves to the host culture sooner and more intensively. As a result, many Puerto Ricans form very small proportions of their neighborhood populations; such isolation from their ethnic groups has been associated with increased rates of mental illness (Srole *et al.*, 1962).

In addition to considerations of migration, social class status in the community and poverty, high rates of schizophrenia among Puerto Ricans in New York City may be partly attributable to cultural factors since high rates have also been reported in Puerto Rico (Rogler and Hollingshead, 1965). Other studies of sex roles and childrearing practices among Puerto Ricans have noted factors that may contribute to psychiatric vulnerability under conditions of stress such as those of migration or social isolation (Fitzpatrick, 1971).

Studies of Puerto Rican attitudes about mental illness suggest that the culturally prescribed belief in spiritualist healing may influence hospital admission rates. Puerto Ricans in New York as well as Puerto Rico often consult spiritualists about their problems rather than seeking early help from mental health professionals (Lubchansky *et al.*, 1970). Since

many psychiatric difficulties are not amenable to the care of spiritualists, it is possible that delay in psychiatric treatment leads to higher rates of eventual hospitalization. In addition, spiritualists and their clientele subscribe to concepts and forms of communication which sound alien and indeed pathological to American ears, so that patients who eventually appear in psychiatric centers may formulate their problems in a way that leads to over-diagnosis of mental illness.

In summary, diagnosed mental illness is found more often among Puerto Ricans in New York City than among the rest of the population. Considerations associated with this high incidence rate are thought to include factors of migration, social class and community status, childrearing practices and role definitions, and advocacy of a spiritualistic conception of mental illness. Investigators of health and illness among Puerto Ricans often conclude that epidemiological or clinical studies of their health status be kept in a social and cultural perspective, and service delivery systems be modified to serve the special needs of this ethnic group.

Jews

Many investigators have studied rates and categories of mental illness among American Jews, observing patterns quite unlike those of the general population and particularly dissimilar to those of black Americans. Jews (who comprise the largest white ethnic group in New York City) seem to form a distinct subgroup not so much in terms of their religious affiliation, though this is the basis for their identification in research terms, but as a result of interactions between cultural, social, genetic and familial characteristics which together form a fused social composite.

Compared to the general population, Jews are demographically atypical in terms of their greater average education, urbanization, income, emphasis on intellectual and liberal values, and closer family organization. Jews, more than any other group of white Americans, are also more apt to be discriminated against; feelings of security and well-being may entail greater emphasis on family ties and personal achievement than is generally true of others.

Psychiatric disorders among American Jews have been studied for more than fifty years, since the time they emigrated from eastern Europe in large numbers. During this period, rates for Jews have been found to be invariably lower than those of non-Jews, in terms of age and sex (standardized hospital admissions for all mental disorders). Rinder (1963) reported, in his review of the literature, that Jewish incidence rates averaged half those of non-Jews, using hospital

admissions data. Further, these rates have remained comparatively stable over time (Brenner, 1973).

Malzberg (1960, 1973) has analyzed Jewish admission rates to all hospitals in New York State in 1940, 1950 and 1960. He found lower overall admission rates among Jews on all occasions, for both total and age-specific groups when he was able to obtain this data. He indicated that even these rates for Jews were inflated because of the likelihood that the total number of Jews, which is the denominator in the rate computation, was under-estimated according to available figures.

Analyzing New York State hospital admissions data in relation to employment records, Brenner (1973) reported that Jews and Germans were the two ethnic groups of the 34 studied that showed greatest sensitivity to economic change. That is, rates for Jews and Germans were most apt to vary inversely with economic conditions. Brenner noted that these two groups are among the highest in socioeconomic status, while the two groups who were least sensitive to economic changes -- blacks and Spanish Americans -- are among the very lowest in socioeconomic status. This differential suggests to Brenner two interpretations of the observed ethnic differences. The first is somewhat mechanistic: those with greater economic assets suffer more during an economic downturn because they have more to lose. Second, Brenner suggests that higher status groups generally have a greater concern with socioeconomic status and therefore experience greater psycho-social loss during periods of economic adversity. Since Jews often derive a sense of security from personal achievement, losses in this realm might have a particularly stressful impact on their overall adjustment.

In terms of diagnostic categories, Jews are usually found to be under-represented in disorders of organic origin including those of advanced age as well as total psychoses and alcoholic and addictive disorders (Hollingshead and Redlich, 1958; Malzberg, 1973; Myers and Roberts, 1959; Rinder, 1963). In contrast, higher rates have been reported in the less common diagnostic categories of involutional and manic-depressive disorders, as well as psychoneuroses of most varieties (Sanua, 1969), though the latter finding was not replicated by Malzberg in his analysis of 1960 hospital data. Since most neurotic patients are treated in out-patient settings, and since they are generally able to afford private treatment which is not recorded in public records, it is likely that the incidence of psychoneurotic disorders among middle and upper class people in general, and Jews in particular, is under-reported. Nevertheless, among out-patients diagnosed as psychoneurotic, Jews are over-represented. In short, it seems apparent that, in Malzberg's words, "there is a fundamental difference between Jews and non-Jews in the distribution of the mental disorders" (1960).

This distribution of psychiatric disorders among Jews is generally attributed to both demographic and cultural characteristics. Their social class membership is notably skewed upward, away from those categories where highest rates of major disorders are observed. Their tradition of cohesive family organization provides a social support system that seems to serve as a buffer against external sources of stress. Because of their higher average income, the proportion of Jews receiving care in private mental hospitals is considerably above that of non-Jews, and the same is probably true regarding out-patient treatment. As a group, Jews display a greater awareness and acceptance of psychiatric theory and treatment as a means of dealing with emotional problems (Brenner, 1973). Such attitudes are probably associated with their intellectual and verbal orientations and values. Because of these characteristics, they are apt to be perceived by psychotherapists as suitable and desirable candidates for non-somatic forms of treatment and, indeed, are apt to profit maximally from such treatment. Available psychotherapeutic techniques seem particularly suited to the belief systems, attitudes, assets and illness manifestation of Jews as an ethnic group.

In summary, both demographic and cultural characteristics of Jews are associated with their lower rates of psychiatric hospitalization. Greater material assets and interest in psychiatry as a problem-solving method seem related to earlier and probably better out-patient treatment. In many instances, this forestalls the need for the more extreme step of hospitalization.

Italians

Italians are the second largest white ethnic group in New York City. First and second generation Italians formed about 14% of the city's population by 1930, 11% in 1960, and 9% in 1970 when 683,000 New Yorkers were identified as Italian-American (Burks, 1973). Most Italians arrived between 1900 and 1924, at which time the National Quota Act sharply curtailed their immigration. Over the last 15 years, it is estimated that about 5,000 Italians have come to New York City annually.

The Italians in New York City have strong local bonds but the social strength of the neighborhood does not extend to embrace the larger Italian community. Family ties are powerful, characteristically encompassing several generations. Neighborhood social networks of friendship and relations provide active supports and identification with the physical locale is enduring. Glazer and Moynihan (1970) noted that Italian neighborhoods in 1920 are still mostly Italian neighborhoods today, which cannot be said of other ethnic areas.

Gans (1963) has described the strong pressures for behavioral conformity among Italians, nourished both by tradition and allegiance to the Church. The well-being and unity of the family are dominant over almost all other interests, including those of personal ambition and individual advancement. Formal education is not highly valued. Maintenance of current status is encouraged rather than upward mobility that would entail a weakening of communal ties in view of the essentially conservative orientation of the Italian community. As a group, status has rather slowly improved over time; at present, the average American of Italian descent is perhaps best described as lower middle class (Brenner, 1973).

Among Americans of Italian background, rates of psychiatric hospitalization have been low compared to other ethnic groups or to the total population. Malzberg (1963) analyzed admission rates to all New York State mental hospitals for first and second generation Italians. He found that both generations had lower admission rates, adjusted for age and sex, than respective members of all other ethnic groups studied, and that native born of Italian parentage had lower overall rates than their parents. Most unusual was the finding that the Italian-born had lower admission rates than native born of native parents, since immigrants typically have higher rates than second and succeeding generations.

The low Italian psychiatric admission rates have been variously attributed to the strength of the family unit as a shared cultural value, the elaborate and longstanding social networks within Italian neighborhoods that sustain their neighbors in times of stress, the low divorce rate due to Catholic affiliation, and the general climate of social stability that prevails in Italian communities. (While many of these reasons sound persuasive, they also apply to the Irish community in New York City with its above average rates of diagnosed mental illness. Accordingly, a more extensive comparison of these two white Catholic ethnic groups is indicated.)

While Italian rates of mental illness are low, they have increased for both sexes in the last 65 years. Brenner (1973) has suggested that these upward trends may be due to increasing recognition in Italian communities that psychiatric treatment may be helpful. Traditionally, Italian-Americans thought mental illness to be caused by a lack of self-control. It was conceptualized in moral language and dealt with by the institutions of church and family. Brenner proposed that increased hospitalization rates may reflect acculturation to American styles of coping with emotional disorders, rather than an actual increase in incidence rates. While this

hypothesis may account for some of the increase, it is probably not due solely to attitudinal changes.

Irish

Although a green line is still painted on Fifth Avenue on St. Patrick's Day, the Irish in New York City have been declining in influence and numbers since the 1930's. At the present time, first and second generation Irish constitute about 7% of the city's population, comprising its fifth largest ethnic group. From the 1870's to the 1930's, the Irish-born constituted more than a quarter of the total population, and over one-third with older stock included. Since then, the number of those who identify themselves as Irish has declined in response to four major factors; radical decline in immigration since the passage of the 1924 Quota Act; the demise of older immigrants; recent heavy movements to the suburbs; and assimilation which, in turn, is associated with a fading of Irish nationalism and lack of Irish cultural influence from abroad.

In terms of economic and social position, the Irish are the most evenly distributed group in New York. Unlike the other major ethnic groups, many of its members are to be found on the Bowery and on Wall Street. Most Irish are perhaps best described as "middle American" or middle class (Brenner, 1973; Dohrenwend and Dohrenwend, 1969). Compared to other ethnic groups who arrived in the nineteenth century, their socioeconomic ascent has been rather slow. As Glazer and Moynihan (1970) observed, the English and Dutch who preceded them, the Germans who accompanied them and the Jews who followed them have all attained somewhat higher overall economic, occupational and educational status.

The incidence and diagnostic distribution of mental illness among the Irish does not closely resemble that of native whites, other ethnic groups or the total population, largely because of dissimilarities in their respective age structure. Because measures of mental illness among the Irish are limited to those who were born in Eire or whose parents were, and because immigration since 1924 has been severely restricted, the population identified as Irish is considerably older than the total population. Malzberg (1963) reported that in 1950 the median age of the Irish population was 55.6, while that of the white native born was 29. Thirty per cent of the Irish were over 65, compared to 6% of the native white population. Since both incidence and type of mental illness vary according to age, this variable must be considered in any analysis of disorders among New York City's Irish.

Malzberg (1963) studied the 1950 rates of first admission

to all psychiatric hospitals in New York State. When standardized for age and sex, the annual first admission rate for all disorders among Irish-born exceeded that of other foreign born combined by 33%, and of native whites by 44%. Compared to each of eight other European ethnic groups studied by Malzberg, the Irish age-standardized first admission rates in 1950 were the highest. Second generation Irish also had higher first admission rates than other native whites of foreign parentage, but rates for second generation Irish were lower than those of their parents.

In terms of distribution by diagnostic category, 57% of Irish-born patients compared to 25% of native-born white patients were diagnosed as having chronic brain syndrome with cerebral arteriosclerosis or senile brain disease. This difference is largely attributable to the disparity in age structure of the two populations.

Both in folklore and in fact it has long been recognized that heavy drinking and alcoholism are major problems among the Irish. Repeated studies over the past several decades have confirmed this phenomenon though not necessarily explained it. For example, Malzberg (1963) found hospital admissions for alcoholic psychoses in New York State to be three times higher for the Irish-born than the white native-born. For second generation Irish, rates were double that of other native whites of foreign parentage. Malzberg concludes, rather unhelpfully, that, "largely on the basis of social tradition, the stimulus to heavy alcoholic addiction was transmitted...from one generation to the next." Discussing drink as the "curse of the Irish," Glazer and Moynihan (1970) suggested that cultural values, behavioral norms and perhaps a genetic susceptibility all contribute to excessive alcoholism rates among the Irish.

Among the ethnic groups studied here, the Irish have the highest rates of excessive drinking, based on self-reports and direct measures of blood alcohol content (Wechsler, Demone, Thum and Kasey, 1970). Puerto Ricans and blacks also have notably higher rates of alcoholism than the general population (Zax *et al.*, 1967). In contrast, Jews and Italian-Americans have extremely low rates of alcoholism. Interestingly, Jews have the lowest rates of total abstinence as well. As Spilka (1971) noted, drunkenness is severely frowned upon among Jews and Italian Catholics, which is not the case among Irish Catholics. He also observed that the alcohol-inhibiting influences of the synagogue and Italian church seem to be declining with increasing acculturation and assimilation.

In summary, compared to other first and second generation Americans and to the total white population, the Irish have

higher rates of diagnosed mental illness and probably higher prevalence rates of alcoholism in the community as well. While some of the differences in incidence and diagnostic distribution are attributable to the comparatively advanced age of the Irish population, there remains an excess of psychiatric admissions that is not accounted for on this basis.

Ethnicity and Ethnic Density: Area Analysis

In view of the foregoing findings regarding differential incidence and prevalence rates of psychiatric disorder for various ethnic groups based on studies of individuals, it would seem plausible to expect that these differences would appear in analyses of area data as well. For example, black groups have higher admissions rates to psychiatric hospitals than other groups. It would therefore seem logical to predict that the larger the black population in a given area, the higher the rate of mental hospital admission. Conversely, one might anticipate that, as the per cent of whites in a given area increases, hospitalization rates would decline for the area as a whole. Racially mixed areas would be expected to have lower rates than all-black areas and higher rates than all-white areas.

There is, however, a growing body of theory and research concerning the variable of ethnic density which presents a different point of view and body of hypotheses. A variety of investigations have revealed, in both planned and serendipitous findings, that ethnic density rather than ethnicity *per se* seems to be a significant determinant of rates of psychiatric disorder in relation to ethnic identity.

A major contribution to studies of the role of density or commonness of a given characteristic in relation to the psychiatric vulnerability of people with that characteristic was published by Wechsler and Pugh (1967). They reasoned that the ready availability of a peer group consisting of people with similar characteristics promotes the development of interpersonal ties, while the absence of such a peer group is associated with a greater degree of stress and social isolation and is more conducive to the generation of psychiatric disorders. Studying all first admissions to Massachusetts mental hospitals during a three-year period, they tested the hypothesis that people with a specified characteristic who lived in places where that characteristic is *less* common should have a higher rate of psychiatric hospitalizations than people with that characteristic living in places where it is *more* common. The findings generally supported this "fit" or density hypothesis, which was investigated with respect to age, marital status, birthplace and occupation.

A variety of studies of psychiatric hospitalization rates for ethnic minorities have reached similar conclusions. Malzberg (1964) found in Canada that English and French Canadians

each had higher admission rates when constituting a minority group in a neighborhood. Mintz and Schwartz (1964) investigated the correspondence between incidence rates of schizophrenia and manic depressive psychoses of first and second generation Italians in Boston and the proportion of Italian-born in their community of residence. They found that communities with a higher Italian density tended to have fewer Italians hospitalized than those with lower density.

Studying Chinese admission rates in Canada, Murphy (1965) found that the Chinese have the lowest rate of all ethnic groups in British Columbia, where they constitute a large group. In Ontario, where they are few and scattered, they have the highest rates. Klee *et al.* (1967), in an ecological study of mental illness in Baltimore, found admission rates in each census tract were highest for the racial group that constituted a small minority (less than ten per cent) in that tract, whether that group was white or black.

In general, these studies cumulatively suggest that the social support generated by the ready accessibility of ethnically similar people plays an important role in influencing vulnerability to stress and psychiatric disorder. It seems that, in addition to the variable of ethnic membership as such in predicting rates of major mental illness, the variable of ethnic density also warrants consideration and evaluation in area and population studies.

Summary of Literature Review

The foregoing literature review leads to three general conclusions:

1. Psychiatric admission rates, diagnoses, length of hospitalization and facility utilization patterns vary between the five major ethnic groups in New York City. Considerably more information is available regarding racial differences than variations between white ethnic groups.

2. Ethnic groups vary markedly in terms of social class, time of migration, age and sex composition, education and occupational level. Many studies of the relative rates of mental disorders between ethnic groups do not equate their samples in terms of these characteristics, making it difficult to draw conclusions about the relative influence of ethnicity *per se* on rates of diagnosed mental illness. Comparisons of ethnic groups stratified by such

measures are sorely needed to clarify sources of ethnic differences in patterns of mental illness.

3. Knowledge in this area is based on studies that vary considerably on such factors as (a) the criteria for mental disorders, (b) the selection of samples, (c) definitions of ethnicity and mental illness, and (d) methods of data analysis. Thus conclusions about the relationships of rates of various mental disorders with ethnic characteristics of defined populations, especially between white ethnic groups, are tentative and must be qualified.

OBJECTIVES OF THE STUDY

The purposes of this study are exploratory in nature and include the following objectives:

1. To estimate, in two sectors of New York City, the extent to which indicators of five ethnic characteristics of health area populations account for variation in rates of mental hospitalization for men and women (21-64) residing in health areas of the two sectors.

2. To assess the relative importance of social class and ethnicity in accounting for rates of hospitalization of men and women (21-64) living in the health areas comprising the two sectors of New York City. More precisely, our interest is in the importance of ethnicity when socio-economic status is held constant or partialled out.

METHODOLOGY

Sector Description

Two geographical sectors of New York City were selected for study. The first, referred to as sector A, is comprised of the boroughs of Queens and Richmond. The second, identified as sector B, includes the boroughs of the Bronx and Brooklyn.

Each of the two sectors is made up of geographical units designated as *health areas* by the New York City Department of Health. Health areas, consisting of two or more whole census tracts, are used by many agencies as units of observation for reporting such information as births, deaths, morbidity,

selected crimes, hospitalization for mental illness and other characteristics of populations living in these health areas. By studying relationships among such characteristics of defined populations and properties of the environments in which they live, it is possible to establish the relative importance of the environment in accounting for differences in population characteristics such as health or mental health. Specifically, we will be concerned with *variation* in the mental health of selected populations residing in sectors A and B as it is related to *variation* in the ethnicity and living circumstances over the two sets of health areas.

Sector Differences: Income

Inspection of Table 1 (see Appendix for this and other Tables referred to) indicates that sector A (Queens and Richmond) is made up of 82 health areas with an average population of 27,828 people; sector B (Bronx and Brooklyn) includes 168 health areas* with a mean population of 24,248 residents. Thus 6,355,629 people live in the two sectors: 2,281,916 in sector A and 4,073,713 in sector B.

Table 1 also presents the ethnic and income characteristics of the two sectors. Each health area is described in terms of the median income of its residents. The means of the median incomes for the 82 health areas of sector A and for the 168 health areas of sector B, along with their respective standard deviations, are found in Table 1.

With an average family median income of $11,595 per year, residents of sector A experience a considerably higher standard of living than do residents of sector B with an average median income of $8,659 per annum. Variation in median income over the health areas of sector A is quite restricted, indicating that a very large percentage of the sector's residents experience a reasonably high standard of living, with relatively few living at or below the poverty line. In contrast, there is twice as much variation in median income over the health areas of sector B. Considered with the low average median income of sector B, this indicates that a considerably larger proportion of sector B residents are living at or below the poverty level.

At the health area level, median income is highly correlated with a number of indicators of socio-economic status. Ecological correlations range from the middle .80's to the middle .90's as follows: positive with educational level (e.g. median income increases as educational level increases), negative with male and female unemployment (e.g. median income decreases as unemployment increases), and negative with

*Observations for five health areas of the Bronx were omitted because of their extreme deviation from average values for that borough.

per cent black or Puerto Rican. Thus, at the ecological or aggregate level, median income appears to be an excellent indicator of the socio-economic and educational status of health area residents.

Sector Differences: Ethnicity

The five ethnic characteristics of health areas considered in this study are defined as follows:

1. Per cent black -- This variable was derived from a 100 per cent sample of the 1970 census. The numerator for each health area is the number of respondents indicating their race or color to be Negro or black. The denominator is simply the total number of people living in each health area. This variable varies from a low of less than one per cent to a high of over 98 per cent.

2. Per cent Puerto Rican -- This variable was derived from a 15 per cent sample of the 1970 census. Respondents to this sample were asked for their birthplace or the birthplace of their parents. The number born in Puerto Rico was used as a basis for estimating the number of Puerto Ricans in each health area. While the same procedure was used to make this estimate in each health area, it is recognized that this estimate is an under-enumeration of Puerto Ricans. That is, young Puerto Ricans whose parents were not born in Puerto Rico would not be identified. As in the variable above, per cent Puerto Rican was computed by dividing the estimated number of Puerto Ricans (that is, first and second generation) in each health area by the total number of people residing in each health area. Variation in this ethnic indicator ranged from a low of less than one per cent to a high of 65 per cent.

3. Per cent Irish -- As in variable two above, the number of Irish residing in each health area was estimated from a 15 per cent sample of the 1970 census. The number of first and second generation Irish citizens estimated from the 15 per cent sample was the numerator for each health area. Per cent Irish was computed by dividing the numerator for each

health area by the total number of residents. Per cent Irish ranged from a low of zero to a high of 12 per cent.

4. Per cent Italian -- This variable was computed exactly as in variable 3. Thus, per cent Italian is based on first and second generation Italians estimated from the 15 per cent sample. Values range from zero to 51 per cent on this variable.

5. Per cent Jewish -- Numerators of this indicator were comprised of persons born in Russia, Rumania or born of parents who lived in Russia or Rumania. These values were estimated from the 15 per cent sample of the 1970 census. Per cent Jewish as an ethnic indicator is computed, as in the above variables, by dividing the numerator for each health area by the total resident population for each health area. Values for this variable range from zero to 33 per cent.

Further inspection of Table 1 reveals that the mean proportions of health area populations comprised of Jewish and Italian citizens are almost identical in the two study sectors. Consideration of the four means and standard deviations indicates that the distributions of per cents are quite skewed, as one would expect. That is, members of ethnic groups are more likely to live with members of the same ethnic group rather than to be evenly distributed over all health area populations. Irish citizens appear to be the smallest minority group in both areas, with sector A having a slightly larger Irish population.

In contrast to the similarities noted above, the two sectors are radically different on the two ethnic variables of per cent Puerto Rican and per cent black. On the average, more than 15% of the residents of sector B are Puerto Rican while the comparable figure for sector A is less than 2%. As in the other distributions, the large standard deviations, relative to the means, indicate that Puerto Ricans tend to cluster in certain sectors, although many are scattered in very small numbers over health areas.

The proportion of the population of sector B health areas made up of black citizens is more than twice that for sector A. Again we note the markedly skewed distribution in both sectors, especially in sector A.

Since the variables of per cent black and per cent Puerto Rican are moderately to strongly inversely related to median

income, as indicated in Table 2, it seems that differences in affluence between sectors A and B are primarily due to differences in proportion of black and Puerto Rican residents.

In sector B, the pattern of relationships of median income with ethnicity is quite clear: as the proportion of white ethnics over the 168 health areas increases, the median income increases; as the proportion of black or Puerto Rican residents increases, the median income decreases.

Sector A differs from this pattern in that per cent Italian and per cent Irish are not related to the median income of health area populations. Thus the distribution of Irish and Italian ethnics bears a different relationship with median income over the two samples of health areas comprising the two sectors. This is probably due to the fact that neither ethnic group constitutes more than 20% of the population of any health area except for 5 in Queens where Italians comprise 20 to 30% of the health area population.

Inspection of the correlations among the five ethnic variables, presented in Table 2, indicate the residential patterns of the five ethnic groups.

Sector Differences: Psychiatric Hospitalization Rates

The dependent variables of this study are the psychiatric hospitalization rates for residents aged 21-64 of *each* or the 250 health areas comprising sectors A and B. Each health area was credited with a psychiatric hospital admission of an area resident, aged 21-64, who was admitted to a state mental hospital or a mental hospital largely supported by state funds. Almost all (85%) of the admissions of this study were to large state mental hospitals serving the four boroughs. The data on admissions was obtained on computer tapes from the New York State Department of Mental Hygiene.*

The three dependent variables of this study were (1) admission rates for men, (2) admission rates for women and (3) admission rates for men and women combined.

The three variables were computed as follows:

1. Rates for Men -- The numerators were the number of men, aged 21 to 64, who were admitted from each of the 250 health areas to state or state supported mental hospitals and were recorded by the record keeping system of the

*We appreciate the cooperation of Mr. Abbott Weinstein and his staff for providing the psychiatric admission data.

New York State Department of Mental Hygiene in fiscal year 1970. The denominators were the number of men, ages 21-64, residing in each of the 250 health areas as indicated in the 1970 census. Rates were computed by dividing each numerator by the appropriate denominator.

2. Rates for Women -- The numerators were, as for the men above, the number of women, aged 21-64, admitted to state and state supported mental hospitals from each of the 250 health areas. Rates for women were computed by dividing the number of female admissions from each health area by the number of women, aged 21-64 residing in the appropriate health area.

3. Rates for Men and Women -- Numerators for the third rates were the total number of men *and* women admitted to mental hospitals from each health area and denominators were the number of men and women residing in each health area.

The mean rate for males was 38 per 1000 male residents of sector A and 61 per 1000 male residents of sector B. The comparable figures for females were 46 and 42 for sectors A and B respectively. For men and women combined, the mean rate for sector A was .043; for sector B it was .050.

Mean hospitalization rates for women of sectors A and B do not differ while mean rates for men and for men and women were both significantly higher for sector B. The five per cent level of significance was used.

The correlation of rates for men with rates for women is identical for the 82 health areas of A and the 168 health areas of B. The magnitude of both relationships was .77. If this value is viewed as the relationship between two independent measures of rates of mental hospital admissions, then the reliability of the rates for men and women combined would be .87 for each of the two sets of areas. Thus, under this assumption, 87 per cent of the variation in combined rates would be considered reliable, with 13 per cent error.

Data Analysis: Summary

Through the use of various statistical techniques of data analysis important relationships between ethnic variables, socio-economic status and rates of psychiatric hospitalization were determined. These relationships are summarized in the

following section. A complete discussion of data analysis and results, as well as relevant Tables, is included in the Appendix.

SUMMARY OF RESULTS

1. Ethnic characteristics of health area populations are strongly associated with mental hospitalization rates for men and women (aged 21-64) living in these health areas. Generally, the increased presence of white, middle-income ethnic groups is negatively related with hospitalization rates while the increased presence of low-income blacks and Puerto Ricans is associated with high hospitalization rates. In combination, the five ethnic variables of this study generally account for more than fifty per cent of the hospitalization rate variation in the two sectors of New York City studied. Thus ethnic differences as characteristics of health area populations play a powerful role in predicting the mental hospitalization rates of these health area populations.

2. Ethnic characteristics of populations are known to be associated with the socio-economic status of these populations. When the influence of median income was removed from ethnic/rate correlations, the magnitudes of relationships were reduced and, in some cases, the direction of the relationship changed. Changes in these relationships varied considerably from sector A to sector B. Generally the control of median income had a greater influence in the less affluent area, B.

When the influence of median income is removed from the relationship of the five ethnic variables with hospitalization rates, the magnitude of relationship is reduced. However, the degree of reduction is much larger in the less affluent sector B when compared with the more affluent sector A.

DISCUSSION

This social ecological study, in which observations are made at the aggregate or population level, indicates that ethnicity, socio-economic status and hospitalization for mental illness are intimately related. The nature of these relationships

varies across different sectors of New York City and therefore probably varies in different cities as well. The ethnic composition of neighborhoods appears to be an important determinant of the relative probability of psychiatric hospitalization for their adult residents. This is qualified by their socio-economic status. If populations of health areas enjoy a relatively high income, as in sector A, ethnicity remains an important predictor of mental hospitalization rates even when median income is controlled or statistically removed. By contrast, in sector B where many residents are poor, the influence of ethnicity on hospitalization, with income controlled, is less powerful.

The five ethnic indicators of this study range in their associations with health area rates of hospitalization from a high negative association to a high positive association, as follows: per cent Jewish, Italian, Irish, Puerto Rican and black (see Table 3). This ranking is similar to that found in studies of individuals reviewed above, where Jews and Italians experience low hospitalization rates relative to blacks and Puerto Ricans, with the Irish falling in between. It is difficult to draw conclusions about the Irish in this study because they are few in number, resulting in a measure (per cent Irish) of low reliability. This same problem applies to the Puerto Ricans in sector A. It will be noted that correlations involving these ethnic indicators tend to be low and not significant. Therefore conclusions must be qualified by the tentative nature of the measures used. Subsequent studies will attempt to derive more accurate estimates of the ethnic composition of health areas from census data (see Implications for Further Research).

It is concluded from this exploratory study that ethnicity is an important factor in understanding the distribution of mental disorders requiring hospitalization over sectors of large urban centers. The particular social ecological context in which ethnic groups reside must also be understood since, as this study has clearly demonstrated, patterns of association between ethnic composition and rates of mental hospitalization vary markedly in sectors of New York City having different socio-economic characteristics.

The following section will suggest selected limitations of this study by indicating plans for further investigation.

IMPLICATIONS FOR FURTHER STUDIES

Problems of Measurement

1. Dependent Variables -- We have pointed out some of the limitations of the measures used to estimate rates of mental illness in this study. The rate variables used were global in nature and no doubt obscure important health area differences. Subsequent studies will be based on three years of records and will include the use of 90,000 hospital admission records. This sample size will allow the development of at least 20 rate variables derived from the sample, stratified by such admission characteristics as referral source, number of admissions, sex, age, ethnicity, family composition and other demographic and personal historical variables.

   In addition, we now have over 100,000 records of the use of outpatient services. A dependent variable that can be derived from the two data sets is the ratio of inpatient to outpatient rates. This variable will describe the selective use of mental health services and has implications for the important issue of the early (outpatient) vs. late (inpatient) use of mental health facilities.

2. Independent Variables -- The second and fourth counts of the 1970 Census provide many estimates of the ethnic composition of census tracts that comprise health areas. Study of these estimates and their interrelationship will provide us with a firm basis for a much more accurate and comprehensive estimate of ethnic composition for each health area, especially for Jews.

Health Area Samples

While this study was designed to make generalizations about health area populations comprising two sectors of New York City, other samples could easily be selected for study. For example, we may wish to study variation in ethnically homogeneous areas which differ in socio-economic status. We may select ethnically similar areas located in different parts of the city to see if ecological context makes a difference as

it seemed to in this study. Differences among white ethnics, especially those with limited incomes, have received little attention and are in need of further investigation.

A General Methodology

The methodology used in this study, usually referred to as social area analysis, has general application in metropolitan centers for understanding *relationships* among *properties of small urban areas*, such as census tracts, and the *health, mental health* and *behavioral characteristics* of *small area populations*. Census data contains a rich variety of information for describing tract residents in terms of their dwellings, demographic, ecological, socio-economic and sociocultural characteristics. Thus, it is possible to develop from census data a set of independent variables that comprehensively describe the social, economic and physical context of tract residents.

Dependent variables may be derived from a variety of sources, including vital statistics, health surveys and special data sets such as the one used in this study. If such data sets include the resident addresses of subjects or clients, it is possible to credit each census tract with residents who use particular services, give birth or experience a particular disease. For example, data describing the type and extent of the use of a wide range of mental health services could be coded by the census tract of residence of clients of the services, thus providing numerators for a set of rates describing patterns of use by census tract residents.

Relationships of the above rates of use with a set of independent variables describing the social, economic and cultural environments of residents would provide one basis for understanding the selective use of services and inferred causes of mental disorders leading to the use of mental health services.

Since all cities are comprised of census tracts, the above procedures have general application whenever data sets that can be coded into census tracts are available. The matching of thousands of addresses to areas of residence would, of course, be a large and monotonous task. However, computer technology is being developed to perform this step with acceptable accuracy. Thus the possibility of area analysis as a basis for understanding, planning and evaluating the use of health and mental health services depends primarily on the development of data sets with sufficient accuracy to be useful.

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REFERENCES

Bagley, C. "Migration, Race and Mental Health: A Review of Some Recent Research," Race, 9, 1968.

Bernard, J. Marriage and Family Among Negroes (Englewood Cliffs, New Jersey: Prentice-Hall, 1966).

Brenner, M.H. Mental Illness and the Economy (Cambridge, Massachusetts: Harvard University Press, 1973).

Burks, E. "Puerto Ricans Say Census Cuts Political Power Here," New York Times, October 2, 1972.

Burks, E. "'Other Americans' Lead City's Foreign Stock," New York Times, February 4, 1973.

Chassan, J. "Race, Age and Sex in Discharge Probabilities of First Admissions to a Psychiatric Hospital," Psychiatry, 26, 1963.

Derogatis, L., Covi, L., Lipman, R., Davis, D. and Rickels, K. "Social Class and Race as Mediator Variables in Neurotic Symptomatology," Archives of General Psychiatry, 25, 1971.

Dohrenwend, B. and Dohrenwend, B.S. Social Status and Psychological Disorder: A Causal Inquiry (New York: Wiley, 1969).

Fisch, M., Gruenberg, E. and Bandfield, C. "The Epidemiology of Psychiatric Emergencies in an Urban Health District," in A. Shiloh and I. Selavan, eds., Ethnic Groups of America: Their Morbidity, Mortality and Behavior Disorders, Vol. II, The Blacks (Springfield, Illinois: Thomas, 1974).

Fischer, J. "Negroes and Whites and Rates of Mental Illness: Reconsideration of a Myth," Psychiatry, 32, 1969.

Fitzpatrick, J. Puerto Rican Americans: The Meaning of Migration to the Mainland (Englewood Cliffs, New Jersey: Prentice-Hall, 1971).

Fried, M. "Social Differences in Mental Health," in J. Kosa, A. Antonovsky and I. Zola, eds., Poverty and Health (Cambridge, Massachusetts: Harvard University Press, 1969).

Gans, H. The Urban Villagers (New York: Free Press, 1963).

Glazer, N. and Moynihan, D. Beyond the Melting Pot, 2nd Edition (Cambridge, Massachusetts: M.I.T. Press, 1970).

Guttentag, M. and Denmark, F. "Psychiatric Labelling: Role Assignment Based on the Projective Test Performance of In-Migrants," International Journal of Social Psychiatry, 11, 1965.

Hollingshead, A. and Redlich, F. Social Class and Mental Illness (New York: Wiley, 1958).

Hoyos, A. De and Hoyos, G. De. "Symptomatology Differentials Between Negro and White Schizophrenics," International Journal of Social Psychiatry, 11, 1965.

Hurley, R. Poverty and Mental Retardation: A Causal Relationship (New York: Vintage Books, 1969).

Jones, E. "Psychotherapists Shortchange The Poor," Psychology Today, 8, 1975.

Karno, M. "The Enigma of Ethnicity in a Psychiatric Clinic," Archives of General Psychiatry, 14, 1966.

Klee, G., Spiro, E., Bahn, A. and Gorwitz, K. "An Ecological Analysis of Diagnosed Mental Illness in Baltimore," in R. Monroe, G. Klee and E. Brody, eds., Psychiatric Epidemiology and Mental Health Planning (American Psychiatric Association "Psychiatric Research Report #22," 1967).

Kleiner, R. and Parker, S. "Goal-Striving, Social Status and Mental Disorder," in S.K. Weinberg, ed., The Sociology of Mental Disorders (Chicago: Aldine, 1967).

Kleiner, R., Tuckman, J. and Lavell, M. "Mental Disorder and Status Based on Race," Psychiatry, 23, 1960.

Kramer, M. "Epidemiology, Biostatistics and Mental Health Planning," in R. Monroe, G. Klee and E. Brody, eds., Psychiatric Epidemiology and Mental Health Planning (American Psychiatric Association "Psychiatric Research Report #22," 1967).

Kriesberg, L. Mothers in Poverty: A Study of Fatherless Families (Chicago: Aldine, 1970).

Kreisman, D. and Joy, V. "Family Response to the Mental Illness of a Relative: A Review of the Literature," Schizophrenia Bulletin, #10, 1974.

Langner, T., Gersten, J. and Eisenberg, J. "Approaches to Measurement and Definition in the Epidemiology of Behavior Disorders: Ethnic Background and Child Behavior," International Journal of Health Services, 4, 1974.

Linn, E. "Drug Therapy, Milieu Change and Release From a Mental Hospital," A.M.A. Archives of Neurology and Psychiatry, 81, 1959.

Lorion, R.P. "Socioeconomic Status and Traditional Treatment Approaches Reconsidered," Psychological Bulletin, 79, 1973.

Lorion, R.P. "Patient and Therapist Variables in the Treatment of Low-Income Patients," Psychological Bulletin, 81, 1974.

Lubchansky, I., Egri, G. and Stokes, J. "Puerto Rican Spiritualists View Mental Illness: The Faith Healer as a Paraprofessional," American Journal of Psychiatry, 127, 1970.

Maas, J. "Incidence and Treatment Variations Between Negroes and Caucasians in Mental Illness," Community Mental Health Journal, 3, 1967.

Malzberg, B. "Mental Disease Among Puerto Ricans in New York City, 1949-1951," Journal of Nervous and Mental Disease, 123, 1956.

Malzberg, B. "Mental Disease Among Negroes," Mental Hygiene, 43, 1959.

Malzberg, B. Mental Disease Among Jews in New York State (New York: Intercontinental Medical Book Corp., 1960).

Malzberg, B. "Mental Disease Among the Irish-born and Native-white of Irish Parentage in New York State, 1949-1951," Mental Hygiene, 47, 1963.

Malzberg, B. Mental Disease in Canada, 1950-1952: A Study of Comparative Incidence of Mental Disease Among Those of British and French Origin (Albany, New York: Research Foundation for Mental Hygiene, 1964).

Malzberg, B. Mental Disease Among the Puerto Rican Population of New York State, 1960-1961 (Albany, New York: New York Research Foundation for Mental Hygiene, 1965).

Malzberg, B. "Mental Disease Among Jews in New York State," Acta Psychiatrica Scandinavica, 49, 1973.

Mechanic, D. "Illness and Cure," in J. Kosa, A. Antonovsky and I. Zola, eds., Poverty and Health (Cambridge, Massachusetts: Harvard University Press, 1969).

Mintz, N. and Schwartz, D. "Urban Ecology and Psychosis: Community Factors in the Incidence of Schizophrenia and Manic Depression Among Italians in Greater Boston," International Journal of Social Psychiatry, 10, 1964.

Murphy, H.B.M. "Migration and the Major Mental Disorders," in M.B. Kantor, ed., Mobility and Mental Health (Springfield, Illinois: Thomas, 1965).

Myers, J.K. and Bear, L. A Decade Later: A Follow-up of Social Class and Mental Illness (New York: Wiley, 1968).

Myers, J. and Roberts, B. Family and Class Dynamics in Mental Illness (New York: Wiley, 1959).

Myers, J. and Schaffer, L. "Social Stratification and Psychiatric Practice: A Study of an Out-patient Clinic," American Sociological Review, 19, 1954.

Nuttall, R.L. and Solomon, L. "Prognosis in Schizophrenia: Role of Pre-morbid, Social Class and Demographic Factors," Behavioral Science, 15, 1970.

Ozarin, L. and Taube, C. "Psychiatric Impatients: Who, Where and Future," American Journal of Psychiatry, 131, 1974.

Pasamanick, B. "A Survey of Mental Disease in an Urban Population -- VII: An Approach to Total Prevalence by Race," American Journal of Psychiatry, 119, 1963.

Pasamanick, B. "Some Misconceptions Concerning Differences in the Racial Prevalence of Mental Disease," American Journal of Orthopsychiatry, 33, 1963.

Pettigrew, T. "Race, Mental Illness and Intelligence: A Social Psychological Review," Eugenics Quarterly, 11, 1964.

Pokorny, A. and Overall, J. "Relationships of Psychopathology to Age, Sex, Ethnicity, Education and Marital Status in State Hospital Patients," Journal of Psychiatric Research, 7, 1970.

Pugh, T. and MacMahon, B. Epidemiologic Findings in United States Mental Hospital Data (Boston: Little, Brown, 1962).

Rabkin, J. "Public Attitudes Toward Mental Illness: A Review of the Literature," Schizophrenia Bulletin, #10, 1974.

Rabkin, J. "Therapists' Attitudes Toward Mental Illness and Health," in A. Gurman and A. Razin, eds., The Therapist's Contribution to Effective Psychotherapy: An Empirical Assessment (In Press).

Rabkin, J.G. and Struening, E.L. "Social Change, Stress and Illness," in N. Miller, Chair, Brain Function and Physical Well-being (Symposium presented at the meeting of the American Association for the Advancement of Science, New York City, January 1975).

Rinder, I. "Mental Health of American Jewish Urbanites: A Review of the Literature and Predictions," International Journal of Social Psychiatry, 9, 1963.

Rogler, L. and Hollingshead, A. Trapped: Families and Schizophrenia (New York: Wiley, 1965).

Russell, M. "Mental Illness Among Negroes," in A. Shiloh and I. Selavan, eds., Ethnic Groups of America: Their Morbidity, Mortality and Behavior Disorders, Vol. II, The Blacks (Springfield, Illinois: Thomas, 1974).

Sanua, V. "Immigration, Migration and Mental Illness: A Review of the Literature with Special Emphasis on Schizophrenia," in E. Brody, ed., Behavior in New Environments (Beverly Hills, California: Sage, 1969).

Schwab, J., McGinnis, N. and Warheit, G. "Social Psychiatric Impairment: Racial Comparisons," American Journal of Psychiatry, 130, 1973.

Singer, B. "Some Implications of Differential Psychiatric Treatment of Negro and White Patients," Social Science and Medicine, 1, 1967.

Spilka, B. "Religion and Mental Disorder," in M. Strommen, ed., Research on Religious Development: A Comprehensive Handbook (New York: Hawthorne Books, 1971).

Srole, L., Langner, T., Michael, S., Opler, M. and Rennie, T. Mental Health in the Metropolis: The Midtown Study, Vol. 1 (New York: McGraw-Hill, 1962).

Struening, E., Rabkin, J. and Peck, H. "Migration and Ethnic Membership in Relation to Social Problems," in E. Brody, ed., Behavior in New Environments (Beverly Hills, California, 1969).

Susser, M. Community Psychiatry: Epidemiologic and Social Themes (New York: Random House, 1968).

Tischler, G., Henisz, J., Myers, J. and Boswell, P. "Utilization of Mental Health Services II: Mediators of Service Allocation," Archives of General Psychiatry, 32, 1975.

Wechsler, H., Demone, H., Thum, D. and Kasey, E. "Religious-Ethnic Differences in Alcohol Consumption," Journal of Health and Social Behavior, 11, 1970.

Wechsler, H. and Pugh, T.F. "Fit of Individual and Community Characteristics and Rates of Psychiatric Hospitalization," American Journal of Sociology, 73, 1967.

Wilson, D. and Lantz, E. "The Effect of Culture Change on the Negro Race in Virginia as Indicated by a Study of State Hospital Admissions," American Journal of Psychiatry, 114, 1957.

Zax, M., Gardner, E. and Hart, W. "A Survey of the Prevalence of Alcoholism in Monroe County, New York, 1961," Quarterly Journal of Studies on Alcoholism, 28, 1967.

APPENDIX

Data Analysis and Results..... *i-iv*

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DATA ANALYSIS

We are concerned in this *exploratory study* with the relationships of ethnic indicators, both singly and in weighted linear combination, with rates of hospitalization for mental illness. To determine the magnitude of relationships between ethnic variables and rates of hospitalization, product moment correlation coefficients[1] were computed between each of the five ethnic variables and the three rates of mental hospitalization for each of the two sectors. The reader is reminded that the unit of observation is the health area. Therefore, for sector A, the ecological correlations are computed over the 82 health areas comprising that sector while for sector B, the correlations are computed over the 168 health areas making up that sector. The 15 correlation coefficients for each sector are found in Table 3.

To estimate the relationship of a weighted linear combination of the five ethnic indicators with the three rates of mental hospitalization for each of the two sectors, six multiple correlation coefficients[2] were computed and presented in Table 3. For the readers' convenience, both R (multiple correlation coefficients) and R^2 (the per cent of shared variance)[3], are presented.

To assess the role of ethnic indicators when median income is controlled or partialled out, fifteen partial correlation coefficients were computed for each of the two sectors and presented in Table 4. In each case, the coefficient indicates the relationship of an ethnic variable with a rate of hospitalization variable with median income held constant or partialled out.

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1. r (product moment correlation coefficient) -- indicates the direction and magnitude of the [linear] relationship between two measures or variables.

2. R (multiple correlation coefficient) -- indicates the magnitude of the relationship between a dependent variable and the weighted, linear combination (i.e., simply added) of two or more independent variables or measures.

3. R^2 (squared multiple correlation coefficient) -- is the proportion, or per cent of variability in the dependent variable that is predicted or accounted for by a weighted, linear combination (i.e., simply added) of two or more independent variables.

To estimate the combined influence of ethnicity with median income controlled, multiple correlation coefficients were computed for each sector with the five ethnic variables and median income as independent variables and the three rates of hospitalization (male, female and total) as dependent variables. The square of the multiple correlation coefficient indicates the per cent of rate variability accounted for by these six independent variables. When the square of the correlation of median income with rate of hospitalization was subtracted from the R^2 value, the result was the contribution of the five ethnic variables in accounting for rate differences with median income controlled. In other words, the line R^2-r^2 equals the per cent of variability in rates accounted for by ethnicity with median income controlled or held constant.

RESULTS

Ethnicity and Rates of Mental Hospitalization

Table 3 clearly supports the generalization that the increased presence of Italians, Irish and Jewish residents in the health areas of both sectors A and B is positively associated with lower rates of mental hospitalization for the total populations of those health areas. The increased presence of black and Puerto Rican citizens is positively associated with increased rates of mental hospitalization.

For sector B, 12 of the 15 correlations are significant at or beyond the .1% level, while for sector A only 6 of the 15 correlations reach this level of significance. The ethnic variable, per cent Irish, contributes very low and, with the exception of male hospitalization rates in sector B, trivial relationships with rate variables. This is probably because there are so few Irish in each health area.

When the five ethnic variables are combined to obtain the best prediction of mental hospitalization rates, substantial relationships are obtained. For male rates the magnitude of relationship is almost identical in the two sectors; the multiple correlations of .75 and .76 indicate that 56 and 58 per cent of the differences in male rates over the health areas of sectors A and B respectively are accounted for from a knowledge of the five ethnic indicators of these sectors. For female rates the magnitude of relationship varies considerably from sector A to B, with sector A receiving a multiple R of .78 as compared with .62 for sector B. In general, a weighted linear combination of the five ethnic variables accounts for more than 50% of the variability in mental hospitalization rates, with the exception of female rates in sector B where 39% of rate differences are predicted.

The Role of Ethnicity with Median Income Controlled

As previously noted in the literature, ethnicity as a characteristic of populations is frequently related to socio-economic status. Table 2 indicates the relationships of median income with the five ethnic indicators for the two sectors. Obviously, as a characteristic of health areas, ethnicity is not independent of income and must therefore be statistically controlled if we are to clearly understand the role of ethnicity in accounting for differences in mental hospitalization rates over the health areas of sectors A and B. To clarify the role of ethnicity with the influence of median income removed, 15 partial correlation coefficients between ethnic and rate variables, with median income partialled out, were computed for each of the two sectors. In general, the magnitude of all correlations of ethnic variables with hospitalization rate is reduced when the influence of income is removed. This is especially true for relationships over the health areas of sector B which contains far more low-income residents.

There are some interesting deviations from the above generalization. For example, when income is removed from the correlation of per cent Irish with the three rate variables, the resulting correlations change from trivial negative values to positive values significant at the .001% level. Thus when the health area populations of sector A are controlled for median income, the increased presence of Irish residents is positively associated with hospitalization rates for all health area residents.

When income is removed from the 15 correlations for sector A, we note the following changes: (1) although the negative correlations between per cent Jewish and hospitalization rates are reduced considerably, the level of negative relationship is significant at the one per cent level; (2) the magnitude of the negative relationships between per cent Italian and the three rate variables was increased so that all correlations are now significant at the 5 per cent level or better; (3) the correlations of per cent Irish with the three rate variables remain slightly negative but trivial; (4) the correlations of per cent Puerto Rican with the rate variables change from modest positive to trivial negative relationships; and (5) while the correlations of per cent black with the three rate variables are reduced, the magnitude of the partialled relationships are substantial and far outrank all other partial correlations including those between per cent black and rate variables for sector B. Thus, when the median income of health area populations of sector A is held constant, the ethnic variable per cent black remains strongly associated with mental hospitalization rates for men and women (21-64) of these health areas.

Hierarchial Regression Analysis

To estimate the overall influence of the five ethnic variables on rates of mental hospitalization, with the effect of median income removed, a hierarchial multiple regression analysis was performed. In this analysis median income was first entered into the equation, followed by the five ethnic variables. The variance in rate differences accounted for by median income was then subtracted from that accounted for by the five ethnic variables and median income. The result, symbolized as R^2-r^2 in Table 4, indicates the influence of the five ethnic variables (with median income removed) on hospitalization rates in terms of the per cent of rate variance accounted for.

For sector A (Queens and Richmond), a substantial proportion (38, 28 and 36%) of rate variance is accounted for by ethnicity *after* income is controlled. In contrast, much less (9, 13 and 12%) variance in rates is accounted for in sector B after income is controlled in this area of greater poverty. Thus when the health area populations of sector A are equated for median income, the five ethnic characteristics of these populations continue to play a very substantial role in predicting health area population rates of hospitalization. In sector B, equating for median income leaves only a minor role for the five ethnic variables in predicting variability in hospitalization rates for health area populations.

TABLE 1

Ethnic and Income Characteristics for Two Geographical Sectors of New York City

Variable	Sector B: Bronx + Brooklyn		Sector A: Queens + Richmond	
	Mean	Std. Dev.	Mean	Std. Dev.
Per cent Jewish	5.44[1]	6.67[2]	5.18	4.66
Per cent Italian	10.42	12.15	10.80	5.86
Per cent Irish	2.54	3.70	3.72	2.86
Per cent Puerto Rican	15.41	16.47	1.75	1.63
Per cent Black	25.08	27.86	11.57	22.33
Median Income	8.66[3]	2.08	11.59	0.96
N Equals	168 Health Areas		82 Health Areas	

[1]Indicates that, on the average, 5.44% of the populations of Sector B are estimated, as previously described, to be Jewish while 10.4% are estimated to be Italian, and so forth.

[2]Indicates the extent of variability around the mean where the values for the 168 health areas are considered.

[3]Median annual incomes of $8,659 and $11,595 respectively.

TABLE 2

Relationships Among Ethnic Indicators and Median Income for Two Geographical Sectors of New York City

	Sector B: Bronx & Brooklyn					Sector A: Queens & Richmond				
	%J	%It	%Ir	%PR	%B	%J	%It	%Ir	%PR	%B
% Jewish	--					--				
% Italian	-07[1]	--				-04	--			
% Irish	09	03	--			-08	04	--		
% Puerto Rican	-47	-37	-33	--		-25	-01	-08	--	
% black	-43	-55	-41	28	--	-30	-43	-39	31	--
Median Income	55[2]	43	52	-77[3]	-70	53	-12	00	-58	-40
N Equals	168 Health Areas					82 Health Areas				

All values are product moment correlation coefficients in .XX format.

For 168 observations, when r = .15, p = .05
r = .20, p = .01
r = .25, p = .001

For 82 observations, when r = .22, p = .05
r = .28, p = .01
r = .36, p = .001

[1]Indicates that as the per cent of Italians living in each of the 168 health areas increases, it is impossible to predict whether the per cent of Jews will increase or decrease.

[2]As the median income in each of the health areas increases, there is a moderate increase in the proportion of the health area population which is Jewish.

[3]As the median income in each of the health areas increases, there is a moderate to strong decrease in the proportion of the health area population which is Puerto Rican.

TABLE 3

Relationships Among Ethnic Characteristics and Rates of Hospitalization for Mental Illness for Two Samples of Health Areas

Ethnic Characteristics	Sector B: Bronx & Brooklyn			Sector A: Queens & Richmond		
	Rates of Hospitalization			Rates of Hospitalization		
	Men	Women	M & W	Men	Women	M & W
Per cent Jewish	-49[1]	-34	-45	-47	-57	-56
Per cent Italian	-36	-29	-34	-24	-11	-18
Per cent Irish	-20	-03	-12	-06	-01	-04
Per cent Puerto Rican	57	36	50	18	30	26
Per cent black	59	47	56	65	61	67
Multiple R	76	62	73	75	78	81
Multiple R^2	58[2]	39	53	56	61	65
N (Health Areas	168	168	168	82	82	82

All values are product moment correlation coefficients of multiple correlations (R) or multiple correlations squared (R^2). All values are in .XX format.

For 168 observations, when r = .15, p = .05
r = .20, p = .01
r = .25, p = .001

For 82 observations, when r = .22, p = .05
r = .28, p = .01
r = .36, p = .001

[1]Indicates(over the 168 health areas of Sector B) that as the per cent of the health area population which is estimated to be Jewish increases, there is a modest decrease in the rate of hospitalization for men.

[2]Indicates that we can account for 58% of the variability in hospitalization rates for men from a knowledge of estimated per centages of the five ethnic groups.

TABLE 4

Relationships Among Ethnic Characteristics and Rates of Hospitalization for Mental Illness, with Median Income Held Constant, for Two Samples of Health Areas

Ethnic Characteristics	Sector B: Bronx + Brooklyn — Rates of Hospitalization			Sector A: Richmond + Queens — Rates of Hospitalization		
	Men	Women	M + W	Men	Women	M + W
Per cent Jewish	-18[1]	-08	-15	-32	-39	-38
Per cent Italian	-09	-09	-10	-33	-22	-30
Per cent Irish	26	32	32	-07	-01	-04
Per cent Puerto Rican	06	-06	01	-10	-05	-08
Per cent Black	20	19	20	57	51	59
Median Income (r)	.70	.50	.64	.43	.57	.54
Median Income (r^2)	48.6	25.5	41.5	18.5[2]	32.8	28.8
R^2 (MI + 5 Ethnic)	57.7	38.9	53.1	56.5[3]	61.0	65.3
$R^2 - r^2$	9.1	13.4	11.6	38.0[4]	28.2	36.5
N Equals	168 Health Areas			82 Health Areas		

Values above the mid-line are partial correlation coefficients expressed in .XX format. With the exception of Median Income (r), values below the mid-line are per cents of variance accounted for in the dependent rate variables by one or more independent variables.

[1]Indicates that in health areas with similar median incomes(or with median income held constant or partialled out), there is a slight decrease in rates of hospitalization as the per cent of Jewish residents increases.

[2]Indicates that 18.5% of the variability in male hospitalization rates can be predicted from a knowledge of median income.

[3]Indicates that 56.5% of the variability in male hospitalization rates can be predicted from knowledge of the 5 ethnic characteristics and median income of the health areas in Sector A.

[4]Indicates that 38% of the variability in male hospitalization rates can be predicted from a knowledge of the 5 ethnic characteristics after median income is held constant.